

INCREASING PRECISION IN MULTI-STAGE PROCESSING OF DIGITAL SIGNALS

ABSTRACT OF THE DISCLOSURE

[0049] Precision of multi-stage digital signal processing is increased by preserving least significant bits of one or more output samples of a particular processing stage, having finite word widths, while avoiding the loss of most significant bits. The technique is applicable to one or more stages of multi-stage digital signal processing, thereby increasing precision therein and the signal-to-noise ratio. A plurality of output samples are calculated using a plurality of input samples, and the dynamic range of one or more of the output samples is decreased if the output sample can be represented in a smaller dynamic range without losing a significant bit. The input samples of a particular stage, obtained from the output samples of a previous stage, may further be normalized so that the input samples are represented in the same dynamic range before being processed.